CHECKLISTS OF THE VASCULAR PLANTS OF THE DELTAIC ISLANDS OF THE PEEL-HARVEY ESTUARY

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ABSTRACT

The vascular flora of the ten named deltaic islands and three islets of the Murray and Serpentine Rivers and the two estuarine deltaic islands and one islet of the Peel Estuary was documented. A total of 322 vascular plant species were recorded, of which 116 were naturalized aliens (weeds). One species of Declared Rare Flora and three Priority Flora have been recorded from the islands.

INTRODUCTION

There are more than 2,565 marine or estuarine islands, islets and rocks in Western Australia. Most southern Western Australian estuaries contain a series of small to medium sized islands and the Peel-Harvey Estuary is no exception. However, as Seddon (1972) noted, only the Canning, Harvey and the Murray and Serpentine Rivers have a well developed series of deltaic islands present in their mouths as they empty into an estuary. The Peel-Harvey Estuary is further distinguished by having riverine deltaic and estuarine deltaic islands. The riverine high sandy deltaic islands of the deltas of the Murray and Serpentine Rivers are a unique feature of the Peel Estuary and the Mandurah region. Most other riverine deltaic islands (viz: those of the Canning, Harvey and Preston Rivers) are low lying, often inundated at high tide and dominated by samphire shrublands and sedgelands.

Despite their unique features only the flora of Culeenup Island, a long term study site of the Western Australian Naturalists' Club, has been previously documented (Hussey *et al.* 1992). Currently the Department of Planning and Infrastructure is undertaking studies on access and status of the Deltaic Islands (Peel Development Commission 2007) and this is a contribution to these deliberations.

SURVEY METHODS

Extensive foot transects of all the islands were undertaken by the authors between 1997 and 2000. Specimens of a range of flora were collected and vouchers lodged in the WA Herbarium. Plant Names follow those officially recognized at the WA Herbarium.

RESULTS

Background

Twelve named islands are found in the Peel Estuary (Figure 1) and four very small un-named islets, here named informally for their adjacent island, but not mapped. These are located as follows

- estuarine deltaic islands at the mouth of the Peel Estuary: Creery and Channel Islands and South Channel Islet (located between Channel and Creery Islands);
- Serpentine River deltaic island: Jennala Island; and
- Murray River deltaic islands: Culeenup, Meeyip, Ballee, Jeergarnyeejip, Worallgaroook, Yunderup, Little Yunderup, Boodalan and Goongoolup Islands and West Yunderup Islet (tip of Yunderup Island – 32° 35' 23" S 115° 45' 40" E), South-West Woorallgarook Islet (between Worallgarook and Yunderup – 32° 35' 22" S 115° 45' 40" E) and North-West Worallgarook Islet (between Worallgarook and Ballee – 32° 35' 03" S 115° 45' 49" E).

Parts or all of all of the islands and islets are listed as National Parks or Nature Reserves, however, only 3 Boodalan, Creery and Channel Islands are formally gazetted as nature reserves, chiefly because the first two have supported breeding colonies of Australian pelicans. The other islands are unvested. Most are proposed to be included in the Peel Regional Park (Western Australian Planning Commission 1996).

Geomorphic Setting and Vegetation

Semeniuk *et al.* (1990) have summarized the geomorphology and climate of the Peel-Harvey estuary. All the islands are located on the alluvial deposits (Pinjarra Plain) of the Murray and Serpentine Rivers, usually with Aeolian deposited Spearwood dunes above these deposits.

All the islands are low lying but most have an area of wind and water deposited sands that overly the alluvial clays of the riverine deposits. The upland sands are covered in a Jacksonia *sternbergiana/ Kunzea glabrescens/ Jacksonia furcellata* tall shrubland over perennial veldt grass, probably the result of past grazing and fire (Richards 1980). Semeniuk *et al.* (2000) also recorded a similar vegetation type on Barr Island, a deltaic island in the mouth of the Collie River and note it is sporadically present along the adjacent shoreline at Pelican Point and on the Preston River Delta. In both areas, however, both the authors and

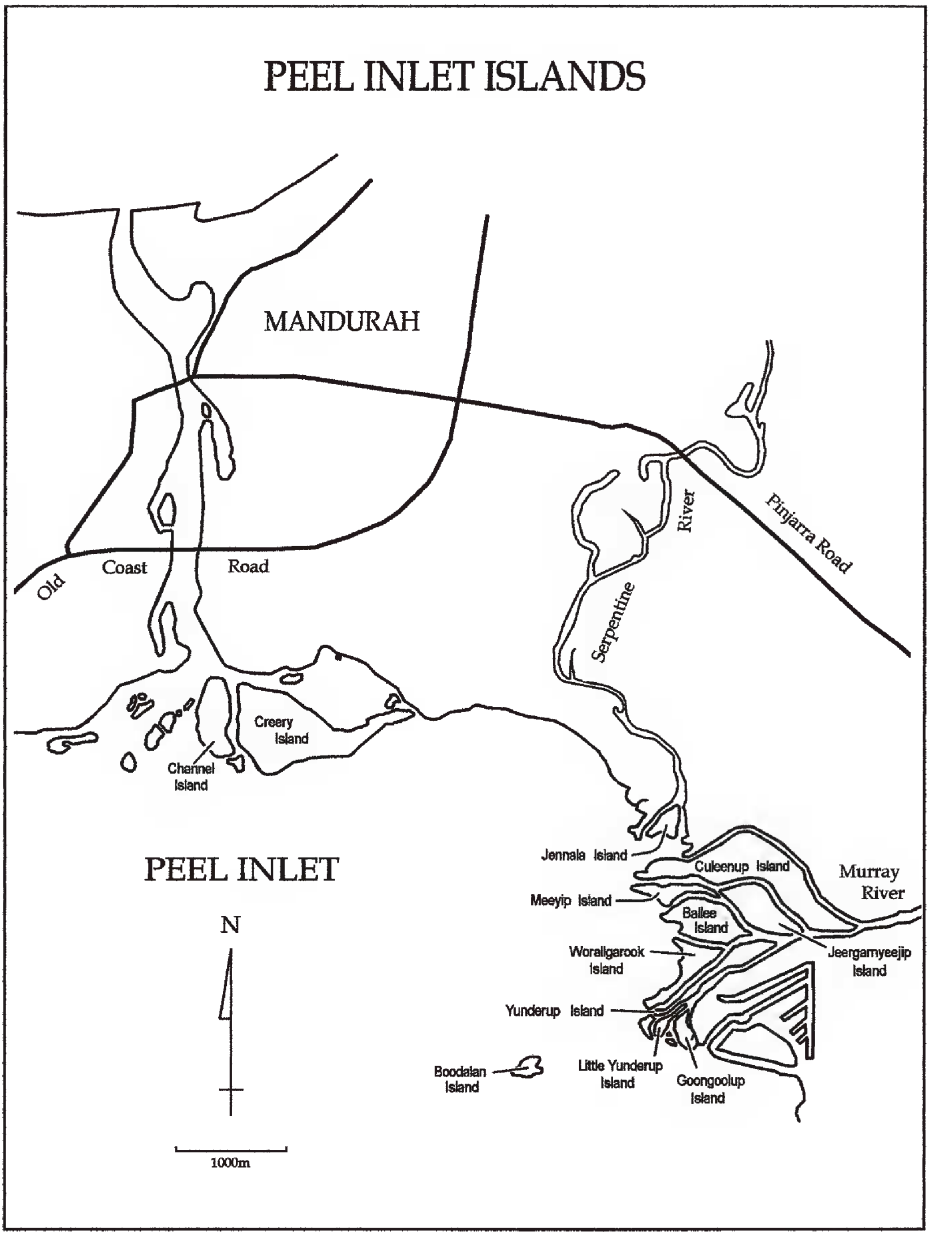

Figure 1. Map showing the location of the twelve named islands and the four unnamed islets in the Peel-Harvey Estuary.

Semeniuk *et al.* (2000) note that the common vegetation on the sandy soils of the adjacent mainland are woodlands of Banksia, Tuart, Marri and Jarrah, which are not present on these islands.

Around these sands are a complex of fresh, sub-saline and saline wetlands, dominated either by woodlands of *Melaleuca rhaphiophylla* or *Melaleuca cuticularis*, shrublands of *Melaleuca vimina*/ M. *incana* or *Melaleuca osullivanii*, succulent low shrublands of *Tecticornia* species, grasslands of *Sporobolus virginicus* or bare mud with an aquatic herbfield of *Ruppia maritima*. Fringing all islands around high water mark are woodlands of *Casuarina obesa* and/ or *Melaleuca cuticularis*. Fresh or brackish seepage areas have dense sedgelands of *Bolboschoenus*. These communities are the result of the fluctuating salinity levels of the rivers and the estuary. These vegetation types are present fringing many estuaries in southern Western Australia, e.g., Leschenault Estuary (Penn *et al.* 2000).

Estuarine islands are not exposed to the direct effects of salt spray, nor are they as isolated from adjacent vegetation as are offshore islands. Therefore, the upland and wetland vegetation of these islands is similar in structure to the adjacent mainland. However, it is normally simpler in composition of the major structural layers and perhaps, therefore, lower in species richness, although this has not been quantified.

Flora

A total of 322 species of vascular plants were recorded from the 12 islands and four islets surveyed (Tables 1 and 2). This is a substantial subset of the known flora of the Peel Harvey Estuary System, where 726 vascular plants species (including 161 weeds) have been recorded (Keighery *et al.* 2006).

- The islands vary greatly in species richness; estuarine deltaic islands: Creery (70 species) and Channel Island (97 species) and South Channel Islet (17);
- Serpentine River deltaic island: Jennala Island (92 species);
- Murray River deltaic islands: Culeenup (269), Meeyip (111), Ballee (126), Jeergarnyeejip (212), Worallgaroook (70), Yunderup (87), Little Yunderup (74), Boodalan (22) and Goongoolup Islands (66) and South Yunderup (16), SW Woorallgarook (17) and SW Woorallgarook Islets (25).

These differences relate to size of the islands, habitat diversity, and location in the estuary and survey effort. The estuarine deltaic islands are reduced in species diversity compared to the larger riverine islands. The extensively surveyed and large Culeenup Island with 269 species probably is comparable only to Jeergarnyeejip Island in terms of

diversity and could be considered to have between 95–100% of it's flora recorded. We estimate that the other islands range between 75–80% of their total flora recorded. All the islands are richer than marine offshore islands of comparable size.

Because of past disturbance and settlement (Richards 1980) there are many weeds recorded for the islands, 116 in total, a large number such as Lantana, Jonquils and Arum Lilies the result of garden escapes. The most serious weeds recorded were:

- Fresh wetlands Arum lilies (*Zantedeschia aethiopica*), *Gladiolus undulatus*,
- Sandy uplands Perennial Veldt Grass (*Ehrharta calycina*), Bridal Creeper (*Asparagus asparagoides*), Black Flag (*Ferraria crispa*), *Freesia* hybrid, One Leaved Cape Tulip (*Moraea flaccida*), Hottentot Fig (*Carpobrotus edulis*), Victorian Tea Tree (*Leptospermum laevigatum*) and *Lantana camara*,
- Fringing vegetation Watsonia (*Watsonia meriana*), (Spiny Rush) *Juncus acutus*, Buffalo Grass (*Stenotraphum secundatum*) and Kikuyu (*Pennisetum clandestinum*).

The declared rare orchid (King Spider Orchid, *Caladenia huegelii*) has been recorded from Culeenup Island.

The priority 2 (Atkins 2008) *Grevillea manglesii* subspecies *ornithopoda*, was recorded from Meeyip Island. Populations of the priority 3 species *Dillwynia dillwynioides* were recorded from Culeenup and Jeegarnyeejip Islands. Populations of the priority 4 species *Antotium junciforme* were recorded from Culeenup and Jeegarnyeejip Islands

A feature of the flora of the larger riverine deltaic islands is the large number of fresh water herbs from clay based wetlands recorded (eg: *Arthropodium preissii*, *Centrolepis glabra*, *Angianthus drummondii*, *Tribonanthes australis* and *Stylidium utricularioides*). These species are a feature of the Pinjarra Plain and reflect the alluvial soils that help form these islands (Semeniuk *et al.* 1990). These species may be a unique feature of these islands.

Several species that are only rarely recorded on the Swan Coastal Plain, normally along rivers, were located during the survey, namely *Dodonaea viscosa* subspecies *spatulata* (only record for the Swan Coastal Plain) and *Grevillea manglesii* subspecies *ornithopoda*.

DISCUSSION

Because few estuarine islands have been surveyed for flora it is difficult to make comparisons with other estuarine systems. However, the flora of the Peel Deltaic islands, although subject to past (and continuing) disturbance is still largely intact and diverse with high conservation values. The islands also possess unusual plant communities and their associated species that deserve protection and further study.

The Peel-Yalgorup wetlands are recognized internationally as a Ramsar wetland (Ramsar, 1990) because of their water bird assemblages. The naturally vegetated deltaic islands of this system contribute significantly to the values of this wetland system providing bird feeding, roosting and nesting sites. They also provide vegetated ecological linkages to the Serpentine and Murray rivers and to the south and east for plant and animal movements (Keighery *et al.* 2006).

ACKNOWLEDGEMENTS

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Table 1. Flora of the Yunderup Delta Islands and Creery Island Nature Reserve

Ba	Ballee Island	Cu	Culeenup Island	LY	Little Yunderup Island										
Boo	Boodalan Island	Go	Goongoolup Island	Mee	Meeyip Island										
Ch	Channel Island	Jee	Jeegarnyeejip Island	Wor	Worallgarook Island										
Cr	Creery Island	Jen	Jennala Island	Yun	Yunderup Island										

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
Ferns/Gymnosperms														
Ophioglossaceae	Ophioglossum	lusitanicum	X				X		X					
Zamiaceae	Macrozamia	riedlei	X		X	X	X	X	X	X	X	X	X	X
Cupressaceae	Actinostrobus	pyramidalis	X				X		X					
Monocotyledons														
Amaryllidaceae	*Amaryllis	belladonna					X							
	*Narcissus	tazetta					X							
Anthericaceae	Arthropodium	capillipes	X		X	X	X		X					X
	Arthropodium	preissii			X				X					
	Caesia	micrantha	X				X		X					
	Chamaescilla	corymbosa					X							
	Corynotheca	micrantha	X		X		X	X	X	X			X	X
	Sowerbaea	laxifora	X				X		X					
	Thysanotus	manglesianus	X		X		X		X	X			X	
	Tricoryne	elatior					X		X					
Araceae	*Zantedeschia	aethiopica					X							
Asparagaceae	*Asparagus	asparagoidies							X					
Asphodeleaceae	Bulbine	semibarbata	X				X		X					
Boryaceae	Borya	scirpoidea					X							
Centrolepidaceae	Aphelia	cyperoides	X				X		X					
	Centrolepis	arsistata	X				X		X					
	Centrolepis	drummondiana	X				X		X			X		
	Centrolepis	glabra					X		X					

Table 1 (cont.)

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
	Centrolepis	polygyna	X			X			X	X		X		
Colchicaceae	Burchardia	multiflora					X							
Commeliniaceae	Cartonema	philydroides			X		X		X					
Cyperaceae	Baumea	juncea	X			X		X	X	X	X	X	X	X
	Bolboschoenus	caldwellii					X		X	X		X		
	*Cyperus	tenellus	X		X				X					X
	Ficinia	nodosa	X	X	X	X	X	X	X	X		X	X	X
	Gahnia	trifida	X				X	X	X	X	X	X	X	X
	Isolepis	cernua							x					
	*Isolepis	marginata	X				X	X	X	X		X		X
	Isolepis	oldfieldiana					X							
	Isolepis	setiformis			X		X		X					
	Lepidosperma	longitudinale	X				X		X		X		X	X
	Lepidosperma	squamatum						X						
	Lepidosperma	tenue					X		X					
	Schoenoplectus	validus	X		X	X	X	X	X	X		X	X	
	Schoenus	caespititius							X					
	Schoenus	odontocarpus					X		X					
	Schoenus	rigens					X		X					
	Schoenus	subfascicularis					X		X					
	Schoenus	variicellae					X							
Dasypogonaceae	Lomandra	suaveolens	X				X		X					
Haemodoraceae	Anigozanthos	viridis					X		X					
	Conostylis	aculeata	X				X		X		X	X	X	X
	Haemodorum	simplex					X		X					
	Haemodorum	spicatum	X				X		X					
	Tribonanthes	australis					X							
	Tribonanthes	violacea					X		X					
Hydrocharitaceae	Halophila	ovalis	X			X						X		

Iridaceae	*Babiana	angustifolia					X								
	*Ferraria	crispa	X				X					X			
	*Freesia	hybrid					X								
	*Gladiolus	undulatus	X			X	X		X	X	X	X			
	*Moraea	flaccida	X				X					X			
	*Ixia	maculata					X								
	Patersonia	occidentalis	X		X	X	X		X	X	X	X	X		
	*Romulea	flava					X					X			
	*Romulea	rosea	X		X	X	X		X	X	X	X	X	X	
	*Tritonia	lineata					X								
	*Watsonia	meriana var bulbillifera	X	X	X	X	X	X	X	X	X	X	X		
Juncaceae	*Juncus	acutus	X												
	Juncus	bufonius	X		X		X		X	X		X		X	
	Juncus	capitatus	X				X		X	X				X	
	Juncus	kraussii	X	X	X	X	X	X	X	X	X	X	X	X	
	Juncus	pallidus	X		X				X	X		X			
	Juncus	subsecundus					X								
Juncaginaceae	Triglochin	calcitrapa	X		X		X		X		X	X			
	Triglochin	centrocarpa					X								
	Triglochin	lineare	X				X		X						
	Triglochin	minutissima	X						X						
	Triglochin	mucronata	X		X	X	X	X	X	X		X			
	Triglochin	striata	X		X		X			X		X			
Orchidaceae	Caladenia	flava	X				X		X						X
	Caladenia	huegelii					X								
	Caladenia	latifolia	X				X		X			X			
	Caladenia	longicauda					X		X						
	Caladenia	marginata					X								
	Caladenia	vulgata					X		X						
	Cyanicula	deformis					X		X						
	Cyanicula	gemmata					X								
	*Disa	bracteata	X		X		X		X						

Table 1 (cont.)

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
	Diuris	laxiflora					X		X					
	Diuris	longifolia	X				X							
	Elythranthera	brunonis	X				X		X					
	Elythranthera	emarginata					X		X					
	Microtis	media	X		X				X					
	Microtis	orbicularis					X							
	Prasophyllum	macrostachyum					X		X					
	Prasophyllum	ovale					X							
	Pterostylis	?nana					X		X					
	Pterostylis	recurva	X						X		X			
	Pterostylis	sanguinea							X	X	X			
	Pyrorchis	nigricans					X		X					
	Thelymitra	antennifera					X							
	Thelymitra	flexuosa					X							
	Thelymitra	aff pauciflora					X		X					
Philydraceae	Philydrella	pygmaea					X		X					
Phormiaceae	Dianella	revoluta	X		X		X		X		X			X
Poaceae	Lachnagrostis	filiformis	X		X				X			X		
	*Aira	caryophyllea	X				X		X	X	X			
	Austrodanthonia	setacea	X		X		X		X	X	X			
	Ausrostipa	campylachne					X							
	Ausrostipa	compressa	X				X		X					X
	Ausrostipa	flavescens	X				X		X	X				
	*Avena	barbata	X		X	X	X		X	X	X	X	X	X
	*Briza	maxima	X		X	X	X	X	X	X	X	X	X	X
	*Briza	minor	X		X		X	X	X		X	X		
	*Bromus	diandrus	X		X	X	X	X	X	X	X	X	X	X
	*Cortaderia	selloana			X							X		
	*Cynodon	dactylon	X	X	X	X	X					X	X	X

	*Ehrharta	calycina	X		X	X	X		X	X	X	X	X	X
	*Ehrharta	longiflora	X		X	X	X	X	X	X	X	X	X	X
	*Hordeum	leporinum				X	X	X						
	*Lagurus	ovatus					X		X	X		X		X
	*Lolium	perenne	X		X		X							
	*Lolium	rigidum	X		X	X	X	X	X	X	X	X	X	X
	Microlaena	stipoides	X				X		X					
	*Parapholis	incurva	X			X			X	X		X		
	*Paspalum	vaginatum		X	X					X	X	X	X	X
	*Pennisetum	claudestinum					X					X		X
	*Pipteranthemum	miliaceum					X							
	*Poa	annua					X							X
	Poa	poiformis	X		X				X			X		
	*Polypogon	monspeliensis	X		X	X	X		X	X	X	X	X	X
	Sporobolus	virginicus	X		X	X	X		X	X	X	X		X
	*Stenotraphum	secundatum					X					X		X
	*Vulpia	myuros	X		X		X		X	X	X	X		X
Potanogetomaceae	Ruppia	maritima	X				X		X	X		X		
Restionaceae	Desmocladus	asper							X					
	Hypolaena	exsulca	X				X		X					
	Lyginia	barbata							X					
	Chaetanthus	aristatus					X		X					
	Meeboldinia	co-angustata				X	X		X					
Dicotyledons														
Aizoaceae	*Carpobrotus	edulis	X	X	X	X	X	X	X	X	X	X	X	X
	Carpobrotus	virescens			X		X	X						
	*Tetragonia	decumbens		X	X	X				X		X		
Amaranthaceae	Alternanthera	nodiflora					X							
Apiaceae	Apium	annuum	X		X	X	X	X	X	X	X			
	Apium	prostratum	X			X	X		X		X		X	
	Daucus	glochidiatus	X		X	X			X	X				
	Eryngium	pinnatifidum							X					
	Homalosciadium	homalocarpum	X				X		X	X				

Table 1 (cont.)

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
	Hydrocotyle	alata	X				X		X					
	Hydrocotyle	diantha					X		X					
	Trachymene	coerulea					X		X					
	Trachymene	pilosa	X				X	X	X		X	X	X	X
Asteraceae	Angianthus	drummondii					X		X					
	Angianthus	preissianus	X		X	X	X		X					
	*Arctotheca	calendula	X		X	X	X							
	* Symphotrichium	subulatum		X	X	X	X		X		X	X		X
	Brachycome	bellidioides					X		X					
	Brachycome	iberidifolia							X	X		X		
	*Conyza	bonariensis					X							X
	*Conyza	sumatrensis	X		X		X		X	X		X		X
	Cotula	coronopifolia	X		X	X	X	X	X			X		X
	Cotula	cotuloides	X			X	X	X	X	X		X	X	
	*Cotula	turbinata					X							
	*Crepis	vesicaria					X							
	*Dittrichia	graveolens		X			X		X			X	X	
	*Helichrysum	luteo-album					X				X	X		X
	*Hypochaeris	glabra	X		X	X	X	X	X	X	X	X	X	X
	*Lactuca	saligna			X									
	Millotia	myosotidifolia					X		X					X
	Myriocephalus	helichrysoides	X				X		X					
	Olearia	elaeophila											X	
	Podolepis	gracilis (pink)					X		X					
	Podotheca	gnaphalioides					X		X					
	Pogonolepis	stricta	X			X	X		X	X		X		
	Quinetia	urvillei	X				X		X		X	X		
	Rhodanthe	citrina					X		X					X
	Senecio	pinnatifolius	X		X		X		X			X	X	X

	Siloxerus	humifusus					X		X				X	
	Siloxerus	multiflorus	X				X		X					
	*Soliva	pterosperma					X							
	*Sonchus	asper					X						X	
	Sonchus	hydrophyllus	X				X		X					
	*Sonchus	oleraceus	X	X	X	X	X	X	X	X	X	X	X	X
	*Ursinia	anthemoides	X		X	X	X	X	X	X	X	X	X	X
	*Vellereophyton	dealbatum	X							X				X
	Waitzia	suaveolens							X					
Brassicaceae	*Brassica	tournefortii			X			X						
	*Cakile	maritima		X	X		X					X		X
	*Rhaphanus	rhaphanistrum		X	X		X					X		
Campanulaceae	*Wahlenbergia	capensis	X				X		X					
	Wahlenbergia	preissii	X					X	X		X	X		
Caryophyllaceae	*Cerastium	glomeratum	X		X		X					X		
	*Corrigiola	litoralis								X				
	*Petrohagia	velutina	X		X	X	X	X	X	X		X	X	
	*Polycarpon	tetraphyllum					X							
	*Silene	gallica	X		X	X	X	X	X	X	X	X	X	X
	*Spergula	arvensis			X	X	X							X
	*Spergularia	diandra	X						X	X		X		
	*Spergularia	marina	X		X	X	X		X	X		X		
	*Stellaria	media	X				X		X	X		X		
Casuarinaceae	Casuarina	obesa	X	X	X	X	X	X	X	X	X	X	X	X
Chenopodaceae	Atriplex	hypoleuca		X	X	X	X	X	X	X	X	X	X	X
	*Atriplex	prostrata	X	X	X	X		X	X	X	X	X	X	X
	Chenopodium	glaucum					X							
	*Chenopodium	multifidum		X										
Chenopodaceae	*Chenopodium	murale	X				X	X		X		X		
	Tecticornia	halocnemoides	X		X	X	X	X		X				
	Tecticornia	pergranulata	X	X		X	X	X						
	Tecticornia	indica ssp bidens	X	X	X	X	X	X	X	X	X			X
	Tecticornia	syncarpa	X		X		X	X	X					

Table 1 (cont.)

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
	Rhagodia	baccata	X		X		X		X	X	X	X	X	X
	Sarcocornia	quinqueflora	X	X	X	X	X	X	X	X	X	X	X	X
	Suaeda	australis	X	X	X	X	X	X	X	X	X	X	X	X
	Threlkeldia	diffusa			X	X	X		X	X		X		
Crassulaceae	Crassula	colorata	X			X	X		X	X	X	X	X	X
	*Crassula	decumbens	X				X					X		
	*Crassula	glomerata	X	X	X	X	X		X					
	*Crassula	natans	X		X		X		X			X		
Droseraceae	Drosera	gigantea					X		X					
	Drosera	glanduligera	X				X		X					
	Drosera	menziesii					X		X					
	Drosera	porrecta					X		X					
Epacridaceae	Brachyloma	preissii							X					
	Leucopogon	propinquus	X											
Euphorbiaceae	Poranthera	microphylla	X				X		X	X				
Frankinaceae	Frankenia	pauciflora			X	X	X		X	X		X	X	
Gentianaceae	*Centaurium	erythraea	X			X	X	X	X	X		X		
	Centaurium	spicatum				X	X		X					
	*Cicendia	filiformis					X		X					
Geraniaceae	*Erodium	botrys					X							X
	*Geranium	molle					X							X
	Geranium	solanderi							X			X		
	*Pelargonium	x domesticum					X							
Goodeniaceae	Anthotium	junciforme					X		X					
	Dampiera	trigona					X		X					
	Goodenia	pulchella	X				X		X				X	
Halorhagaceae	Gonocarpus	nodulosus	X				X		X					X
	Halorhagis	brownii					X							
	Myriophyllum	drummondii					X							

Lamiaceae	*Stachys	arvensis					X								X
Lauraceae	Cassytha	racemosa	X		X	X	X	X	X	X	X	X	X	X	X
Lentibulariaceae	Utricularia	multifida					X		X						
Lobeliaceae	Isotoma	hypocrateriformis	X						X						
	Lobelia	anceps	X		X		X		X	X			X		
	Lobelia	tenuior					X		X	X			X		
	*Monopsis	debilis	X				X		X						
Loranthaceae	Amyema	linophyllum	X						X			X			X
	Amyema	miquelii					X	X	X			X			
	Lysiana	casuarinae	X			X	X	X	X		X	X			
Lythraceae	Lythrum	hyssopifolia	X						X						
Malvaceae	Lawrencia	spicata							X				X		
Menyanthaceae	Villarsia	capitata					X								
Mimosaceae	Acacia	cyclops	X		X	X		X							
	*Acacia	podalyriifolia					X								
	Acacia	pulchella	X		X		X	X	X		X	X	X	X	
	Acacia	saligna	X		X	X	X	X	X	X	X	X	X	X	
Myoporaceae	Myoporum	caprarioides	X				X	X	X	X	X	X	X	X	
Myrtaceae	Astartea	scoparia	X				X		X		X		X		
	Calothamnus	lateralis					X						X		
	Eucalyptus	rudis	X	X	X		X	X	X	X	X	X	X	X	
	Kunzea	glabrescens					X	X	X	X	X	X	X	X	
	Kunzea	recurva	X				X		X						
	*Leptospermum	laevigatum					X								
	Melaleuca	cuticularis	X		X	X	X	X		X	X	X	X	X	
	Melaleuca	incana					X	X	X				X		
	Melaleuca	rhaphiophylla	X		X		X	X	X	X	X	X	X	X	
	Melaleuca	osullivanii	X				X	X	X			X	X	X	
	Melaleuca	viminea	X		X	X	X	X	X	X	X	X	X	X	
Onagraceae	Epilobium	hirtigerum			X										
Orobanchaceae	*Orobanche	minor	X		X		X		X	X					X
Oxalidaceae	*Oxalis	corniculata					X								
	*Oxalis	glabra	X				X	X			X	X			

Table 1 (cont.)

FAMILY	GENUS	SPECIES	Ba	Boo	Ch	Cr	Cu	Go	Jee	Jen	LY	Mee	Wor	Yun
	*Oxalis	pes-caprae	X		X	X	X				X	X	X	X
	*Oxalis	purpurea					X							X
Papilionaceae	*Chamaecytisus	palmensis					X							
	Dillwynia	dillwynioides					X		X					
	Gompholobium	tomentosum					X		X	X				
	Hardenbergia	comptoniana	X				X		X					
	Jacksonia	fucellata	X		X		X	X	X	X	X	X	X	X
	Jacksonia	sternbergiana	X		X	X	X	X	X	X	X		X	X
	Kennedia	prostrata					X		X					
	*Lotus	angustissimus	X		X		X		X		X	X		
	*Lotus	suaveolens					X							
	*Lupinus	angustifolius					X							
	*Lupinus	cosentinii			X	X	X				X			
	*Lupinus	luteus					X							
	*Lupinus	mutabilis					X							
	*Medicago	polymorpha					X							X
	*Melilotus	indica			X		X							
	*Ornithopus	compressus			X		X					X		
	*Trifolium	campestre					X					X		X
	*Trifolium	dubium			X		X							
	*Trifolium	subterraneum					X							X
	*Vicia	sativa			X		X					X		
	Viminaria	juncea	X		X		X		X	X	X	X	X	
Polygalaceae	Comesperma	integerrimum	X	X	X	X		X	X		X			
Polygonaceae	*Acetosella	vulgaris					X							X
	*Rumex	crispus	X	X	X	X	X				X		X	X
	*Rumex	pulcher							X			X		X
Portulaceae	Calandrinia	calyptrata			X			X	X					
	Calandrinia	corrigioloides	X				X	X		X	X			

	Calandrinia	granulifera	X		X	X							
Primulaceae	*Anagallis	arvensis	X			X	X	X		X	X	X	
	Samolus	junceus	X		X	X		X		X	X		X
	Samolus	repens	X			X		X	X	X	X		
Proteaceae	Banksia	littoralis				X							
	Conospermum	triplinervium				X							
	Grevillea	manglesii ssp ornithopoda									X		
	Hakea	prostrata				X		X	X				
	Hakea	varia			X	X		X				X	
Rubiaceae	*Galium	divaricatum				X							
	*Galium	murale					X	X	X				
	Opercularia	vaginata				X		X					
Santalaceae	Exocarpos	sparteus	X			X	X	X	X	X	X	X	X
Sapindaceae	Dodonaea	viscosa ssp spatula						X		X			
Scrophulariaceae	*Dischisma	arenarium				X		X			X		X
	Glossostigma	diandrum				X		X					
	Gratiola	pubescens	X			X							
	*Parentucellia	viscosa		X		X		X					
Solanaceae	Anthocercis	ilicifolia	X			X		X	X			X	
	*Solanum	nigrum	X	X		X	X	X	X				
Stylidiaceae	Stylidium	brunonianum	X			X		X					
	Stylidium	calcaratum				X		X					
	Stylidium	divaricatum				X							
	Stylidium	inundatum	X			X							
	Stylidium	roseo-alatum				X							
	Stylidium	utricularioides				X		X					
Verbenaceae	*Lantana	camara										X	

Table 2. Vascular Flora of the un-named Islets

Species	South Channel	West Yunderup	North-West Wooroll-garook	South-West Wooroll-garook
*Anagallis arvensis			X	X
Apium prostratum	X	X	X	X
Atriplex hypoleuca				
*Atriplex prostrata		X	X	X
Bolboschoenus caldwellii		X		X
*Bromus diandrus		*		
*Cakile maritima	X	X	X	
*Carpobrotus edulis		X		
Casuarina obesa	X	X	X	X
*Chenopodium murale			X	
*Cynodon dactylon			X	X
Eucalptus rudis				X
Ficinia nodosa	X		X	
Frankenia pauciflora	X	X	X	
Juncus kraussii	X	X	X	X
*Lolium perenne		X	X	X
Melaleuca cuticularis		X		
Melaleuca viminea		X	X	
Myoporum capparoiodes			X	
*Paspalum vaginatum		X	X	
Rhagodia baccata		X		
*Rhaphanus rhaphanistrum				X
*Rumex crispus		X	X	
Samolus repens			X	
Sarcocornia quinqueflora	X	X	X	X
*Solanum nigrum		X	X	X
*Sonchus oleraceus		X	X	X
Sporobolus virginicus	X	X	X	
*Stenotraphum secundatum		X	X	
Suaeda maritima	X	X	X	X
*Symphotrichum subulatum		X	X	X
Tecticornia indica		X		
Tecticornia halocnemoides	X		X	X
Triglochin striata	X		X	X